ENERGYSOLUTIONS

ENERGY*SOLUTIONS*
Containerized Waste Facility
Waste Acceptance Criteria

Revision 6

Corporate Offices
423 West 300 South, Suite 200
Salt Lake City, UT 84101
Phone: (801) 649-2000
Fax: (801) 537-7345

Containerized Waste Facility
Interstate 80, Exit 49
Clive, UT 84029
Phone: (801) 649-2010
Fax: (801) 413-5652

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1.0 PURPOSE

This procedure is designed to establish a consistent method for assuring that receipt of Class A, low-level, containerized, radioactive waste is in accordance with Radioactive Materials License (UT 2300249).

2.0 SCOPE

This procedure applies to Energy*Solutions* Certified Generators shipping Class A, containerized, low-level radioactive waste to Energy*Solutions*' Containerized Waste Facility (CWF). The Customer's responsibilities include obtaining a Disposal Agreement, providing Compact Export Approval, waste profiling, manifesting, packaging, scheduling, shipping/transporting, delivery and all associated required documentation. This document provides additional information for the Customer(s) concerning Energy*Solutions* support, contacts and schedules. Any deviation from the requirements of this procedure must be approved in accordance with Attachment 8.2, WAC Variance Request Form.

This procedure does not provide the guidance for obtaining Certified Generator status with Energy*Solutions*.

3.0 DEFINITIONS

3.1 **Certificate of Compliance**

Document issued by the Utah Division of Radiation Control (UDRC) specifying a container's approval to be used for transport or disposal.

3.2 **Certified Generator**

A generator who has successfully completed Energy*Solutions*' generator certification review process.

3.3 **Certified Containerized Waste**

Each waste type (e.g., Dry Active Waste (DAW), resin, solidified waste) identified by a Certified Generator as being generated and managed in accordance with the processes, procedures, and quality assurance controls specified in the generator certification review.

3.4 **Certified Containerized Waste Profile Record (C-WPR), EC-98210**

The C-WPR describes the waste types subject to the Certified Generator Approval for disposal in the CWF.

The C-WPR also provides the generator with a checklist of documents to be submitted for Energy*Solutions*' review.

This form also contains a statement that the generator will comply with applicable regulations, Energy*Solutions*' Radioactive Material License and this procedure for shipments to the CWF.

3.5 Class A Low-Level Radioactive Waste (LLRW)

Radioactive waste that meets both of the following requirements:

3.5.1 Meets the classification requirement as stated in Utah R313-15-1008, and

3.5.2 Is not high-level radioactive waste, spent nuclear fuel or byproduct material [11e.(2)].

3.6 Compact Export Approval Letter

Approval required from the low-level radioactive waste compact of origin (including the Northwest Compact), or for states unaffiliated with a low-level radioactive waste compact, the state of origin, to the extent a state can exercise such approval. Prior to receiving an initial, low-level radioactive waste shipment for disposal from a generator, Energy*Solutions* shall receive documentation that the waste has been approved for export.

3.7 Containerized Waste Facility

The CWF is a distinct area within the footprint of Energy*Solutions*' Class A LLRW Disposal Cell that will be used to dispose of containerized waste.

3.8 Customer Disposal Agreement

A contractual agreement between a Customer and Energy*Solutions* to dispose of waste.

3.9 Encapsulation

The process of centering a waste mass, such as a source or filter, within a Utah Division of Radiation Control (DRC) approved stabilization agent so the classification may be based on the overall volume or mass of the final solidified waste or centering a waste mass within a Utah DRC-approved solidification agent (Attachment 8.5) for shielding purposes.

3.10 Energy*Solutions*' Uniform Low-Level Radioactive Waste Manifest

Documentation that must be completed by a waste generator, collector or processor who transports or offers for transportation, low-level radioactive waste intended for ultimate disposal at a licensed low-level radioactive waste disposal facility. Energy*Solutions* has its own distinct version as defined in Step 6.3. This consists of:

3.10.1 NRC Form 540 – Shipping Papers

3.10.2 NRC Form 541 – Container and waste description

3.10.3 NRC Form 542 – Manifest Index and Regional Compact Tabulation, if applicable

3.10.4 Energy*Solutions*' electronic manifest is a CWF-approved manifesting format compatible with Energy*Solutions*' electronic waste information system (EWIS)

3.11 Heavy-duty Closure Device

Bolts having 5/8 inch or larger diameter.

3.12 High Integrity Container (HIC)

A container commonly designed to meet the structural stability requirements of UAC R313-15-1008 and to meet Department of Transportation requirements for a Type A package. HICs shall be processed or handled as a liner if the package is not intended to provide stability as prescribed in UAC R313-15-1008.

3.13 Large Component

Components which are not amenable to packaging in standard shipping containers (i.e., intermodal, sea van, etc.) such as, steam generators, reactor pressure vessels, etc., or a package greater than 331 ft^3, which require special transportation, disposal plan and/or regulatory approval.

3.14 Liner

Cylindrical strong tight container for packaging of radioactive waste. HICs shall be processed or handled as a liner if the package is not intended to provide stability as required in UAC R313-15-1008.

3.15 Non-conforming Shipment

A non-conforming shipment includes any violation of Energy*Solutions*' license, State or Federal regulations, or this WAC.

3.16 Notice to Transport

The Notice to Transport (EC-98243) is issued to the Customer after Energy*Solutions*' review of the C-WPR has been satisfactorily completed. The generator may begin to schedule shipments only after receipt of a Notice to Transport. The Notice to Transport is generator/site specific.

3.17 Residual Waste

Low-level radioactive waste resulting from processing or decontamination activities that cannot be easily separated into distinct batches attributable to specific waste generators. This waste is attributable to the processor or decontamination facility, as applicable.

3.18 Shipment Identification (ID) Number

The Shipment ID Number is assigned by Energy*Solutions* after the review and acceptance of the generator's Advanced Shipment Notification Form, EC-98242 (Attachment 8.3).

3.19 Solidified

Waste that is solidified by a Utah DRC-approved solidification agent, is a free standing monolith and has no more than 0.5% of the waste volume as free liquids. (See Attachment 8.5)

3.20 Source Material

Means: (1) Uranium or thorium, or any combination thereof, in any physical or chemical form, or (2) ores which contain by weight one-twentieth of one percent (0.05%) or more of: (i) uranium, (ii) thorium, or (iii) any combination thereof. Source material does not include special nuclear material.

3.21 Special Nuclear Material (SNM)

Plutonium, uranium-233, or uranium enriched in the isotope 233 or in the isotope 235.

3.22 Special Shipment

Non-routine shipment that requires special handling.

3.23 **Stable**

Denotes the term used to describe a waste's structural stability.

3.24 **Unrestricted Release**

Material release equivalent to NRC Regulatory Guide 1.86 as defined in EnergySolutions' Radioactive Material License UT2300249, Table 27-A.

3.25 **Unstable**

Term which denotes the waste's structural stability. The waste is in a form or a container that is not approved by the Utah DRC to meet stability requirements in accordance with the requirements of UAC R313-15-1008(2) and the U.S. Nuclear Regulatory Commission Branch Technical Position on Waste Form.

3.26 **Unusual Hazard**

Unusual hazards include, but are not limited to, the presence of neutron emitters in the shipment, spills in or on shipping containers or vehicles, any damage which has occurred to a disposal container or lifting device, airborne or breathing hazard during unloading, etc. Contact the CWF Operations department for specific questions.

3.27 **Void**

Spaces within the waste and between the waste and its packaging reduced to the maximum extent practicable.

3.28 **Waste Collector**

An entity, operating under a Commission or Agreement State license, whose principal purpose is to collect and consolidate waste generated by others, and to transfer this waste, without processing or repackaging the collected waste, to another licensed waste collector, licensed waste processor, or licensed land disposal facility.

3.29 **Waste Generator**

An entity, operating under a Commission or Agreement State license, who (1) possesses any material or component that contains radioactivity or is radioactively contaminated for which the licensee foresees no further use, and (2) transfers this material or component to a licensed land disposal facility or to a licensed waste collector or processor for handling or treatment prior to disposal. A licensee performing processing or decontamination services may be a "waste generator" if the transfer of low-level radioactive waste from its facility is defined as "residual waste."

3.30 **Waste Processor**

An entity, operating under a Commission or Agreement State license, whose principal purpose is to process, repackage, or otherwise treat low-level radioactive material or waste generated by others prior to eventual transfer of waste to a licensed low-level radioactive waste land disposal facility.

4.0 RESPONSIBILITIES

4.1 **Business Development**–Department within Energy*Solutions* responsible for Customer Disposal Agreements.

4.2 **CWF Health Physics Department**–Responsible for radiological surveys and processes, personnel and environmental dose, radiological training and shipment and receiving of radioactive material. The CWF Health Physics department is managed by the Director of Health Physics.

4.3 **CWF Operations Department**–Responsible for overall site operations, including scheduling and waste handling and disposal. The Operations department is managed by the CWF Operations Manager.

4.4 **CWF Operations Manager**–Responsible for the overall CWF site operations in compliance with Federal and State regulations and Energy*Solutions*' radioactive material license.

4.5 **Corporate Radiation Safety Officer**–Responsible for the overall site environmental and radiological operations in compliance with Federal and State regulations and Energy*Solutions*' Radioactive Material License.

4.6 **Director of Health Physics (DHP)**–Responsible for the site radiological. All Health Physics Technicians report to the DHP.

4.7 **Director of Technical Services**–Technical interface between Energy*Solutions* and the generator. Coordinates generator certification submittals and internal review/ evaluation of information. Issues the Notice to Transport once the generator is certified.

4.8 **Health Physics Technicians III (HPT)**–Responsible to the DHP for performing radiological surveys, monitoring personnel and environmental dose, receiving and shipping radioactive material, completing Radiation Work Permits (RWPs), etc.

4.9 **Information Systems Manager**–Manager of Energy*Solutions*' Information Systems department responsible for the proper operation of computers, software, hardware and the Energy*Solutions'* Waste Information System (EWIS).

5.0 GENERAL

5.1 CWF Contact Information

The telephone numbers and e-mail addresses for contacts that are necessary for disposing of radioactive waste at the CWF (See Attachment 8.1).

5.2 Normal Hours of Operation

5.2.1 The normal hours of site operations are Monday through Friday, 7:30 a.m. to 3:30 p.m. Deviations from this must be scheduled through the CWF Operations department.

5.2.2 Corporate Office hours are between 8:00 a.m. to 5:00 p.m., Monday through Friday.

5.2.3 Shipment Acceptance Hours–All shipments, unless previously approved by the CWF Operations Manager, must arrive at the CWF by 9:00 a.m. of the day of disposal or they may be rescheduled to the next working day. This is necessary to ensure that the shipment can be offloaded during daylight working hours.

5.3 Holidays

5.3.1 Energy*Solutions* normally observes the following holidays and will be closed for business on the indicated dates or as specifically noted in separate correspondence (any of the following holidays occurring on a weekend will be observed either Friday or Monday):

New Years Day

Presidents Day

Memorial Day

Independence Day

Labor Day

Thanksgiving Day (includes day after)

Christmas Day (includes day after)

5.4 Pre-shipment Requirements

5.4.1 Each shipment containing wastes with activities totaling 16,000 curies or contact dose rates in excess of 400 R/hr shall contact the Director of Technical Services.

5.4.2 Before the receipt of any radioactive waste, a contract, in form and substance acceptable to Energy*Solutions*, certifying compliance with this procedure, and any subsequent changes, shall be in the possession of Energy*Solutions*' Business Development department.

5.4.3 "Collect" freight shipments shall not be accepted at the CWF, unless prior agreement has been made between Energy*Solutions*' Business Development department and the Customer. Demurrage charges, associated with shipments that do not arrive as scheduled, are not the responsibility of Energy*Solutions*.

5.4.4 All Customers who ship waste to the CWF shall be Certified Generators, unless otherwise approved by the Director of Technical Services.

5.4.5 All waste shippers shall obtain a Shipment ID Number from the CWF's Operations department prior to shipment of waste.

5.4.6 Radioactive waste shipments that arrive at the CWF without a Shipment ID Number shall be a non-conforming shipment and processed in accordance with Section 6.12.

5.4.7 All shipments shall meet the requirements of 49 CFR and 10 CFR 20, 61 and 71, as applicable.

5.4.8 Individual waste containers may be inspected by Energy*Solutions* upon receipt to determine content and/or physical form.

5.4.9 Rigging (slings, etc.) and other lifting devices, which are attached to packages, must be rated for that package and in good operating condition. Prior to shipping, rigging equipment must be inspected and found to be in compliance with requirements in 29 CFR 1910.184.

5.4.10 When a shipment contains any of the below-listed radionuclides, the CWF Operations department shall be notified during shipment scheduling:

5.4.10.1 Aluminum-26

5.4.10.2 Berkelium-247

5.4.10.3 Calcium-41

5.4.10.4 Californium-250

5.4.10.5 Chlorine-36

5.4.10.6 Rhenium-187

5.4.10.7 Terbium-157

5.4.10.8 Terbium-158

5.4.10.9 Cf-252 (in excess of 5.4 Ci)

5.4.10.10 Co-60 (in excess of 8.1 Ci)

5.4.10.11 Cs-137 (in excess of 27 Ci)

5.4.10.12 Gd-153 (in excess of 270 Ci)

5.4.10.13 Ir-192 (in excess of 22 Ci)

5.4.10.14 Pm-147 (in excess of 11,000 Ci)

5.4.10.15 Se-75 (in excess of 54 Ci)

5.4.10.16 Tm-170 (in excess of 5,400 Ci)

5.4.10.17 Yb-169 (in excess of 81 Ci)

5.4.11 Any package exceeding 331 ft^3 or a weight of 20,000 pounds shall have prior approval before shipment.

5.4.12 Energy*Solutions* shall not accept radioactive waste shipments delivered by common carrier (i.e., FedEx).

5.4.13 All shipments to the CWF shall be consigned only for the CWF. It is not permissible to mix waste containers destined for disposal at the Bulk Waste Facility (BWF) and the CWF on one shipment.

5.5 Shipment Documentation

5.5.1 Energy*Solutions*' Uniform Low-Level Radioactive Waste Manifest includes NRC Forms 540/540A, 541/541A and 542/542A, as appropriate. (See Section 6.3)

NOTE: *Waste Collectors and Waste Processors shall submit a Form 542.*

5.5.2 The Customer shall include the following with the Shipping Papers:

5.5.2.1 A written statement of any unusual hazards and/or precautions that must be taken, as appropriate. (Step 6.10.10)

5.5.2.2 DOE/NRC Form 741 for special nuclear material, as appropriate.

5.5.2.3 Conveyance radiological survey

5.6 Off-Loading Schedule

5.6.1 Arriving shipments should be off loaded in the order of arrival, unless conditions require alternative arrangements.

5.6.2 Special shipments should be off loaded in accordance with contractual or other arrangements made in advance.

5.6.3 Casks and other shipments that require non-routine operations for off loading (such as for ALARA or SNM considerations) may be deferred to an appropriate time for commencement of handling. Generators shall keep the CWF Operations department informed of changes to minimize the impact on scheduling.

5.6.4 License and criteria limitations, weather or site ground conditions and equipment availability are all key items that may cause delays or rearrangements of shipments in off loading.

5.7 Driver Check-in Procedure

5.7.1 Check in with the Security Guard at the Entrance Gate and park vehicle as directed by security personnel.

5.7.2 Complete required security documentation.

5.7.3 Security will issue a Truck Driver's Badge.

5.7.4 The driver must stay with the waste shipment until it is accepted by CWF personnel (do not drop the trailer and leave).

5.7.5 The CWF Shipping HPT will collect the shipping manifest from the driver.

5.7.6 The CWF Shipping HPT will instruct the driver of the disposal process.

5.8 Delays

5.8.1 Energy*Solutions* shall not be responsible for transport equipment detention or special equipment demurrage charges assessed by the carrier. Payment of detention/demurrage charges shall be the responsibility of the Customer.

5.8.2 Energy*Solutions* assumes no responsibility for transport equipment delays or special detention charges assessed by the carrier due to weather delays, improper paperwork, special casks, non-routine off loads, decontaminating vehicles or containers, violation of Federal and/or State requirements or other shipment discrepancies.

5.8.3 Waste received in casks shall remain in the cask until it can be directly disposed.

5.9 Radiological Survey Instruments

For dose rate surveys performed on waste packages and conveyances, the CWF Health Physics department will use Geiger-Mueller (GM) instrumentation. It is recommended that generators shipping to the CWF for disposal also use GM instrumentation for waste/transportation dose rate surveys. These data will be used for ALARA/regulatory verification. The generator's Uniform Manifest and supporting radiological data must agree within +/- 25% with CWF Health Physics department survey results.

5.10 Waste Radiological Analysis MDL/LLD

5.10.1 Energy*Solutions* will require manifests to list radionuclides specified in 10 CFR 20, Appendix G and the NRC's Branch Technical Position for Waste Classification. In addition, Energy*Solutions* requests that generators list any radionuclides, which are statistically significant, even though they may not meet the below criteria:

5.10.1.1 H-3, C-14, I-129, Tc-99

5.10.1.2 Any significant radionuclide listed on Utah DRC R313-15-1008, waste classification tables. Significant being defined as 0.01 times the concentration of that radionuclide listed on Table I or 0.01 times the smallest concentration of that radionuclide listed in Table II. (See Attachment 8.6)

5.10.1.3 Those radionuclides with concentrations greater than 7 uCi/cc, if not listed on Table I or II.

6.0 PROCEDURE

6.1 **Waste Scheduling**

6.1.1 An Advanced Shipment Notification Form, Attachment 8.3 is required. The generator shall e-mail (preferred) or fax the Advanced Shipment Notification Form, EC-98242, to the CWF Operations department (See Attachment 8.1).

6.1.2 The CWF Operations department shall contact the Customer with questions and/or return the Advanced Shipment Notification Form, EC-98242, with a CWF Shipment ID Number, when the shipment delivery schedule is approved.

NOTE: *The information on the Advanced Shipment Notification Form is used for planning purposes. Delays may occur if the actual shipment deviates significantly from the estimate.*

6.1.3 Customers shall update the CWF Operations department of any changes to the information provided in accordance with Step 6.1.1 (e.g. cancellations or other pertinent changes). Submit the revised Advanced Shipment Notification Form to document changes.

6.2 **Shipment Departure Notification**

It is assumed that the shipment will leave the customers site, in a timely manner, to arrive at the CWF as scheduled in the Advanced Shipment Notification. If this is not the case, the customer shall notify the CWF Operations department of the shipment schedule changes.

6.3 **Energy*Solutions*' Uniform LLRW Manifest Forms**

6.3.1 In order to facilitate timely and efficient disposal of a Customer's waste, the CWF Operations department needs to verify a shipment's classification and package void prior to unloading the waste. This task is accomplished via an advanced copy of Energy*Solutions*' Uniform Low-Level Radioactive Waste Manifest Form 541. The manifest shall be submitted to Energy*Solutions* at the earliest time possible and in accordance with the following steps.

6.3.1.1 Generators required to use a Form 542 shall submit an advanced copy of Energy*Solutions*' Uniform Low-Level Radioactive Waste Manifest Form 541 to the CWF

Operations department at least two working days (by 9:00 a.m.) prior to the shipment's arrival unless the manifest is submitted electronically per step 6.3.1.3 (email preferred).

6.3.1.2 Waste Generators shall submit an advanced copy of Energy*Solutions*' Uniform Low-Level Radioactive Waste Manifest Form 541 to the CWF Operations department upon shipment departure from the customer's site (email preferred).

6.3.1.3 An electronic version of Energy*Solutions*' Uniform Low-Level Radioactive Waste Manifest Form 541 is preferred by Energy*Solutions*. Electronic manifests shall be transmitted to cwf@energysolutions.com prior to shipment departure from the customer's site. (In order to transmit electronic versions of Energy*Solutions*' Uniform Low-Level Radioactive Waste Manifest, Energy*Solutions*' CWF Operations department shall approve the process.)

6.3.2 Prior to shipment acceptance, Energy*Solutions*' Uniform Low-Level Radioactive Waste Manifest is inspected by the CWF Health Physics department. Other State and Federal regulatory agency inspections may also be performed. A signed copy of Energy*Solutions*' Uniform Low-Level Radioactive Waste Manifest shall be returned to the shipper within seven days after the shipment has been accepted for disposal.

6.3.3 A letter indicating that the shipment has been received will be sent to the shipper within seven days should acceptance be delayed (e.g., inclement weather, etc.).

6.3.4 Instructions

The Uniform LLRW Manifest Forms authorized for shipment to Energy*Solutions*' CWF have been modified and are not identical to the NRC's generic Uniform LLRW Manifest. A generator may handwrite in any revisions to the Energy*Solutions* manifest until their manifest printing system has been updated. At receipt of waste, the shipper's copy of the manifest (official copy) shall be as described below.

6.3.4.1 Complete Energy*Solutions*' Uniform Low-Level Radioactive Waste Manifest in accordance with NUREG-BR-0204, Instructions for Completing NRC's Low-Level Radioactive Waste Manifest. Differences are listed below.

FORM 540

6.3.4.2 Block 5:

- Shipment ID Number– Energy*Solutions*-generated number given to the shipper during scheduling.
- Utah Generator Site Access Permit No.–Enter generator-specific site access permit number as issued by the Utah DRC. The Generator Site Access Permit Number must agree with the "Shipper- Name and Facility" listed in Block 5.

6.3.4.3 Block 8, Manifest Number:

Example: XXXX-C-ZZZZ

- XXXX- Generator number
- C- Containerized Waste Facility
- ZZZZ- Shipment number, starting with 0001 and incrementing by one for each additional shipment.

6.3.4.4 Block 9, Consignee: In addition to other instructions, the shipper shall identify the waste is being shipped for disposal to the CWF.

6.3.4.5 Block 9, Contact: CWF Operations department.

NOTE: *When a manifest generating software application does not permit the information in Block 9 to be changed; the form shall be changed by hand on the printed document.*

6.3.4.6 Block 9, Telephone Number: (801) 649-2010

6.3.4.7 Block 16, Total Package Activity: In addition to SI units, units of millicuries are also required.

6.3.4.8 Block 19, Identification Number of Package: This ID number is mandatory and must be identical and readily visible on the waste package.

FORM 541

6.3.4.9 Block 5, Container ID Number/Generator ID Number(s): Unique disposal container identification number, which agrees with the identification number on the disposal container. The container identification number may include both numbers and letters and shall not exceed 15 characters in length. Also indicate identification number(s) of the generator(s) contributing waste to the disposal container. For Waste Collectors and Processors, a unique identification number shall be listed as the first entry in Block 5 (after the container identification number) that specifically identifies the Waste Collector or Processor. The generator identification number may include both numbers and letters and shall not exceed 15 characters in length.

Example: 123XYZ/456ABC

- 123XYZ – Container ID Number
- 456ABC – Generator ID Number

6.3.4.10 Block 11, Waste Descriptor: Annotate percent of waste volume of each type of waste material. It is only necessary to list a waste volume that will significantly affect the container density. This is used to calculate an effective density of the container. For example:

paper, plastic	50%
metal	25%
concrete rubble	25%, or
resin	100%

NOTE: *Waste percentages do not need to be listed if the waste package will require void remediation by* Energy*Solutions prior to disposal (refer to Section 6.4.4).*

⇒ When it is not possible to add this information electronically through the manifest generating software application, the shipper shall either (1) add the information by hand to Block 11, or (2) record the information on the "Additional Notes" page of the manifest. In all cases, this information shall be considered an integral part of the manifest and the

certification in Block 10 of Form 540 applies to the information.

6.3.4.11 Block 12, Container Waste Volume: Ensure that volume is actual waste volume in the container. Block 12 cannot be the same volume as listed in Block 7, Volume.

6.3.4.12 Block 15, Radiological Description: In addition to other requirements, list significant radionuclides followed by their respective activities.

6.3.4.13 Some of the notes at the bottom of the Form 541, such as containers types, solidification agents, etc., are not applicable or allowed at the CWF. In those cases, the license and/or WAC must be referenced for approved containers, etc.

FORM 542

6.3.4.14 Block 1, Identification Number: Enter Utah Generator Site Access Permit Number as issued by the Utah DRC. This should agree with Block 5 of the Form 540.

6.3.4.15 Block 6A, Waste Description (Nomenclature): Fill in with waste description, as applicable (i.e., resin, soil, concrete, etc.).

6.3.4.16 Block 11.E, Waste Weight: List weight of material attributed to that generator.

6.3.4.17 Block 11.F, Maximum Package Radiation Level: This information is not required by Energy*Solutions*. Either insert "N/A" in the individual generator block or insert the maximum package radiation level. Insert "N/A" for the total at the bottom of the page.

6.3.5 Special Considerations

6.3.5.1 All package activity totals and similar information shown on Energy*Solutions*' Uniform Low-Level Radioactive Waste Manifest shall match all accompanying paperwork for a given shipment.

6.3.5.2 All disposal volume, weights, radiation levels, activities, etc., shall be accurate when the shipment is received for

disposal. The activities and weights on the continuation sheets shall equal the totals listed on the manifest cover sheet.

6.3.5.3 The weights and volumes listed on Energy*Solutions*' Uniform Low-Level Radioactive Waste Manifest must be as accurate as possible. This information is used by CWF personnel to select the proper off loading equipment for the particular package. Failure to list correct weights (+/- 10%) could result in personnel injury, and/or equipment damage, and/or Utah DRC investigation. Discrepancies of this type could result in a substantial penalty charge.

6.3.5.4 Energy*Solutions* performs random checks of packages (free standing liquids, weight, volume, dose rate, etc.) to determine accuracy of measurements recorded by shippers.

6.3.5.5 The Customer shall provide a written statement on or attached to Energy*Solutions*' Uniform Low-Level Radioactive Waste Manifest listing any unusual hazards. (See Step 6.10.10)

NOTE: *Prior to shipment, notification of unusual hazards shall be made to the CWF Operations department.*

6.4 Waste Classification and Packaging

6.4.1 All shipments received at the CWF shall be properly classified and marked in accordance with Utah R313-15-1008 (see Tables I and II Attachment 8.6), the NRC Branch Technical Position on Radioactive Waste Classification, as amended and the NRC Branch Technical Position on Concentration Averaging and Encapsulation, as amended.

NOTE: *Utah R313-15-1008 is essentially equivalent to 10 CFR 61.55 through 57. The generator must confirm with the latest revision of R313-15-1008 since Utah is an Agreement State.*

6.4.2 Each package shall be durably marked on top of the disposal container (e.g., Class A– unstable or AU).

6.4.3 The Energy*Solutions* Uniform Low-Level Radioactive Waste Manifest shall indicate the waste class for each disposal package listed as marked on the individual package.

6.4.4 All waste containers shall be filled to the maximum extent practical. In addition, voids within the package shall not exceed the limits specified in this section unless approved by Energy*Solutions* for void remediation at the disposal facility.

6.4.4.1 15 percent of container internal volume for containers up to 215 cubic feet external volume;

6.4.4.2 10 percent of container internal volume for containers greater than 215 cubic feet to 331 cubic feet external volume;

6.4.4.3 Containers greater than 331 cubic feet external volume require special approval.

6.4.4.4 Containers with voids exceeding the limits specified above shall require void remediation. Energy*Solutions* shall approve of shipments requiring void remediation using the Advanced Shipment Notification Form (EC-98242) during the scheduling process (refer to Section 6.1).

NOTE: *The volume or mass of non-radioactive material added to meet void requirements shall not be used in the classification determination.*

6.4.5 LLRW containing SNM shall comply with Section 6.10.9.

6.4.6 The package identification and other required marking and labeling shall be clearly visible on the shipping package. Special emphasis should be directed to this when wrapping material is placed on the shipping package.

6.4.7 Cardboard boxes, corrugated paper drums and wooden packages are not acceptable containers for disposal.

6.4.8 LLRW shall be contained in metal, fiberglass, or plastic/poly containers or Utah DRC-approved HICs unless otherwise approved via a WAC Variance Request Form (Attachment 8.2).

6.4.9 Disposal containers shall not be corroded to the point of container degradation. Containers having minor surface rust are acceptable but shall meet, at a minimum, the general packaging requirements of 49 CFR.

NOTE: *Packages that have rust will be susceptible to further inspection.*

6.4.10 All boxes must be equipped with skids or non-returnable lifting devices. The use of 2 x 4 boards nailed together is acceptable.

6.4.11 Drums or other containers filled with non-radioactive materials shall not be used for shielding.

6.4.12 Any supplemental shielding, interior or exterior to the shipping containers, shall be approved by the CWF Operations department (document on Advanced Shipment Notification Form) prior to shipping. (This does not include shielded vans or cask shipments.)

6.4.13 A van is not considered a shipping container.

6.5 Van Shipments

6.5.1 Vans with hydraulic lift gates are not acceptable.

6.5.2 Drums

6.5.2.1 Closed vans are the preferred method for a shipment of drums.

6.5.2.2 Drums weighing 1,000 pounds or less shall not be shipped on pallets without prior approval.

6.5.2.3 Drums exceeding 1,000 pounds shall be provided with appropriate lifting devices, which have been approved by the CWF Operations department (document on Advanced Shipment Notification Form, EC-98242) before shipment.

6.5.2.4 Drums weighing greater than 1,000 pounds with the appropriate lifting devices shall be segregated within the same shipment from drums weighing less than 1,000 pounds. Drums of different sizes shall also be segregated within the same shipment.

6.5.2.5 Drums shall not be shipped on their sides.

6.5.2.6 Drum rings and bolts shall be secured properly and be structurally strong enough to support the weight of the drum while off loading.

6.5.2.7 Drums shall comply with 49 CFR. Bulging lids exceeding the height of the closure ring or bulging bottoms extending below the bottom ring of drum shall not be shipped.

6.5.2.8 Drums may be double stacked with proper bracing, provided the heavier drums are on the bottom.

6.5.2.9 Each package shall have a top clearance of at least twelve inches in a closed van at the minimum vertical distance.

6.5.3 Packages Weighing Less Than or Equal to 6,000 Pounds

6.5.3.1 Each package shall have a minimum clearance of three inches from the van walls.

6.5.3.2 Packages shall be elevated with skids from the van floor and accessible to a forklift. The use of 2 x 4 boards nailed together is acceptable.

6.5.3.3 Each package shall have a top clearance of at least twelve inches in a closed van at the minimum vertical distance.

6.5.3.4 Steps 6.5.3.1 through 6.5.3.2 are not applicable to drums.

6.5.3.5 Dunnage used to establish spacing is considered sacrificial.

6.5.4 Packages Weighing More Than 6,000 Pounds

6.5.4.1 Packages in excess of 6,000 pounds, shall not be shipped in closed, hard top vehicles.

6.5.4.2 Open-topped vans (e.g., covered wagon) or equivalent, including a “box cask,” can be used provided lifting devices designed for the package are secured to the top of packages and readily available for easy access.

6.5.4.3 Each package shall have a minimum clearance of three inches from the van walls.

6.5.4.4 Lifting devices shall have prior approval by the CWF Operations department (document on Advanced Shipment Notification Form) before shipping.

6.5.5 Mixed Shipments (Drums, Boxes, Liners)

6.5.5.1 Mixed shipments shall comply with Steps 6.5.2 through 6.5.4, as applicable.

6.5.5.2 Do not stack drums on boxes or boxes on drums.

6.5.5.3 Drums or boxes may be loaded in the forward section of the van with definite segregation of the two types of containers. (ALARA should dictate the placement of containers.)

6.5.5.4 Improperly mixed shipments shall result in an additional off loading charge or refusal of the shipment.

6.6 Flatbed Trailer Shipments

6.6.1 Flatbed shipments shall comply with Section 6.5, as applicable.

6.6.2 Packages with attached lifting devices are not required to have bottom clearance.

6.6.3 Boxes less than 6,000 pounds and/or drums shipped on flatbed trailers must be loaded in such a manner that they may be off loaded from the side using a forklift.

6.7 Cask Shipments

6.7.1 Failure to observe appropriate requirements shall result in the submission of noncompliance information to the appropriate regulatory agency.

6.7.2 All drums, boxes, liners or HICs shall have appropriate lifting devices.

6.7.2.1 Disposal containers and/or pallets shall have the lifting devices secured at the top of the container or pallet. This is to prevent the cable from becoming caught under or between the container(s) or pallet(s).

6.7.2.2 Lifting slings, cables, etc. shall be of sufficient length (e.g., overlap when lying on the top of the container) so cask-operating personnel can reach the lifting device with a remote operating tool from one side of the cask without direct exposure to the waste package(s).

6.7.2.3 When using pallets, the containers shall be positioned to remain balanced and stable on the pallet when lifted clear of the cask.

6.7.2.4 When tall, slender containers (i.e., demineralizers) are loaded on a pallet inside the cask, the containers shall be tied or secured together at the top to prevent containers from falling off the pallets during offloading.

6.7.2.5 A shipment consisting of individual disposal containers, not on pallets, shall have attached to each container a lifting device that will allow off loading by a single lift.

Example: Four demineralizers without a pallet would require the use of a "D" ring with a 4-part spreader (spider). Each leg of the spider would be attached to one of the disposal containers' lifting slings.

6.7.2.6 Lifting slings or pallets attached to disposal containers are considered sacrificial and may not be returnable, unless annotated otherwise.

6.7.3 Waste classification marking shall be placed on the top of the container(s) so it can be observed prior to removing the container from the cask.

6.7.4 Disposal containers within casks and internal surfaces of casks may have loose surface contamination levels up to 50,000 dpm/100 cm^2 beta-gamma without prior approval from the CWF Operations department.

6.7.5 During winter months or when ice can form on top or around cask, the shipper should wrap the cask with a rain cover to prevent ice from forming on the working surfaces of the cask.

6.7.6 Drums

A cask shipment containing drum(s) are categorized as follows:

6.7.6.1 Drum(s) with maximum one-meter dose rate less than 500 mrem/hr:

Prepare drum(s) in accordance with Step 6.7.2. The drum pallet will be returned to the customer.

6.7.6.2 Drum(s) with maximum one meter dose rate equal to or greater than 500 mrem/hr:

- Place drum(s) on drum pallet.
- If there are not enough drums to justify a drum pallet, contact the CWF Operations department for further discussion.

6.8 Contamination Limits of Packages/Vehicle

6.8.1 General

The receipt of excessive surface contamination on containers in casks or otherwise, is very undesirable from the standpoint of ALARA and contamination control. Customers should use reasonable means to ship containers with minimal surface contamination to the maximum extent practical. Shipping packages shall not contain waste material outside of the disposal package.

6.8.1.1 With the exception of cask shipments (see Step 6.7.4), all packages and vehicles received at the CWF shall comply with the contamination control limits of 2,200 dpm/100 cm^2 beta-gamma and 220 dpm/100 cm^2 alpha, without prior approval.

6.8.1.2 Loose surface contamination on and between packages that may be obscured by various barriers (i.e., impact limiters, base plates) shall be considered. Contamination limits for the package, the barrier and the vehicle shall comply with 49 CFR and Reference 7.7.

6.8.1.3 In general, containers with loose surface contamination can be received. Contact the CWF Operations department prior to shipment of any smearable contamination in excess of Step 6.8.1.1 on the disposal container(s).

NOTE: *E-mail is preferred for this contact.*

6.8.1.4 Disposal containers that have been wrapped to prevent spread of loose contamination shall have approval from the CWF Operations department (document on the Advanced Shipment Notification Form).

6.8.1.5 The Customer shall notify the CWF Operations department, prior to departure, of any shipment that has the potential for causing airborne contamination under normal handling conditions and/or has contamination exceeding the limits specified in 49 CFR.

NOTE: *E-mail is preferred for this contact.*

6.8.2 Floor Covering

Plywood or other materials that are placed over the transport vehicle's flooring for contamination control shall be considered sacrificial.

6.9 Contamination Release Limits for Vehicles Exiting the CWF

6.9.1 Enclosed vehicles used solely for the transport of radioactive materials (Exclusive Use) and properly marked "For Radioactive Materials Use Only," in accordance with 49 CFR.

6.9.1.1 Fixed contamination shall not exceed 10 mrem/hr on contact with the interior surface or 2 mrem/hr at one meter from the interior surface.

6.9.1.2 Removable contamination shall not exceed 220 dpm/100 cm^2 alpha and 2,200 dpm/100 cm^2 beta-gamma in the interior or on the exterior of the vehicle.

6.9.2 Enclosed vehicles used solely for transport of radioactive material (Exclusive Use) and NOT marked according to Step 6.9.1:

6.9.2.1 Fixed contamination shall not exceed 0.5 mrem/hr at any accessible surface.

6.9.2.2 Removable contamination for beta-gamma shall not exceed 2,200-dpm/100 cm^2.

6.9.2.3 Removable contamination for alpha shall not exceed 220-dpm/100 cm^2.

6.9.3 Empty cask (Empty package, UN 2908)

6.9.3.1 Fixed contamination shall not exceed 0.5 mrem/hr at any exterior surface.

6.9.3.2 Removable external contamination for beta-gamma shall not exceed 2,200-dpm/100 cm^2 beta-gamma or 220-dpm/100 cm^2 alpha.

6.9.3.3 Internal contamination shall not exceed 220,000-dpm/100 cm^2 beta-gamma and 22,000-dpm/100cm^2 alpha.

6.9.4 Vehicles for Unrestricted Release

6.9.4.1 Removable beta-gamma contamination shall not exceed 200 dpm/100 cm^2.

6.9.4.2 Removable alpha contamination shall not exceed 20 dpm/100 cm^2.

6.9.4.3 Fixed beta-gamma contamination shall not exceed 1,000 dpm/100 cm^2.

6.9.4.4 Fixed alpha contamination shall not exceed 100 dpm/100 cm^2.

Note: *Conveyance return routing must be specified so that EnergySolutions can perform the appropriate survey and release criteria for the conveyance and cask.*

6.9.5 Conveyances that cannot be released as stated above may be delayed and the Customer may incur additional charges.

6.10 **Special Categories**

6.10.1 Dry Active Waste (DAW)

6.10.1.1 DAW consists of paper, plastic, contaminated metals, building rubble, air filters, etc.

6.10.1.2 DAW must be packaged and classified for disposal in accordance with Utah Radioactive Material License UT 2300249 and Section 6.4.

6.10.2 Biological, Pathogenic or Infectious Contaminated Material

6.10.2.1 Animals and by-products, including dried blood, are considered biological material. Glassware, sharps, lab equipment or any material that at one time was subjected to or contained these materials may also be considered biological, pathogenic or infectious contaminated material.

6.10.2.2 Untreated biological, pathogenic or infectious material is prohibited from disposal within the CWF.

6.10.2.3 Animal remains, with the exception of skeletal remains only, are prohibited from disposal at the CWF.

6.10.2.4 The generator shall document (certify) the treatment of the waste and its efficacy or provide explanation and certification of why the radioactive waste does not require treatment. This will be completed as part of the Generator Certification process.

6.10.3 Sealed Sources

Sealed sources cannot be accepted for disposal at the CWF.

6.10.4 Liquid Radioactive Waste (solidified)

Liquid radioactive waste shall be solidified with a Utah DRC-approved solidification agent with no liquid exceeding 0.5 % of the volume of the waste. The waste must contain as little free standing and non-corrosive liquid as is reasonably achievable.

6.10.5 Solid Wastes Containing Free Standing Liquids

6.10.5.1 Solid waste containing liquid shall contain as little free standing and non-corrosive liquid as is reasonably achievable, but in no case shall the liquid exceed 1% of the waste volume.

6.10.5.2 Absorbent material may be placed in packages of dry, solid waste to absorb unintentional and incidental amounts of liquids.

6.10.6 Scintillation Products and Containers

6.10.6.1 Scintillation products that are characteristic or listed hazardous wastes as defined by RCRA are prohibited.

6.10.6.2 Solidified or processed scintillation products that are no longer characteristic hazardous waste, but were prior to solidification/processing are also prohibited.

6.10.6.3 Non-hazardous scintillation products shall be managed in accordance with Step 6.10.6.

6.10.7 Oil

6.10.7.1 Petroleum-based oils, regardless of waste form, are not acceptable for disposal.

6.10.7.2 Waste containing incidental or trace amounts of absorbed oil are acceptable, providing they do not exceed one percent (1%) of the waste volume in a container. Waste streams cannot be blended or mixed to obtain compliance.

6.10.8 Pyrophoric Materials or Flammable Solids

Pyrophoric materials and flammable solids are prohibited from disposal at the CWF.

6.10.9 Special Nuclear Material

6.10.9.1 The maximum amount of SNM that Energy*Solutions*' CWF may possess, undisposed of at any one time, shall not exceed 350 grams U-235, 200 grams U-233 and 200 grams Pu, or any combination of them in accordance with the following formula:

$$\frac{\text{grams U-235}}{350} + \frac{\text{grams U-233}}{200} + \frac{\text{grams Pu}}{200} \text{ not to exceed } 1$$

6.10.9.2 Annotate the quantity of SNM on the Advanced Shipment Notification Form, EC-98242, (Attachment 8.3) as described in Step 6.1.

6.10.10 Unusual Hazards

6.10.10.1 Unusual hazards include, but are not limited to, spills in or on shipping containers or vehicles, any damage that has occurred to a disposal container or lifting device, etc.

6.10.10.2 The CWF Operations department (document on the Advanced Shipment Notification Form, EC-98242) approval is required prior to departure of any shipment with unusual hazards to the site.

6.10.10.3 The shipper shall provide a written statement on or attached to Energy*Solutions*' Uniform Low-Level Radioactive Waste Manifest containing information as to unusual hazards.

6.10.10.4 Wind, weather or other site hazards may delay off loading this type of shipment.

6.10.11 High Integrity Containers

6.10.11.1 All ion exchange resins, liquid filters and/or liquid filter media and sludges shall contain as little free standing and non-corrosive liquid as is reasonably achievable, but in no case shall the liquid contained be in excess of 1% of the waste volume. This shall be accomplished by dewatering or by using Utah DRC-approved solidification agents (Attachment 8.5).

6.10.11.2 Since the CWF disposal cell does not meet the stability requirements of R313-15-1008, liquid cartridge filters, which are encapsulated and classified by concentration averaging, are not acceptable for disposal.

6.10.11.3 Use of absorbents is only allowed for incidental and unintentional liquids only.

6.10.11.4 Resins can only be disposed in HICs or liners and must meet the void criteria in Step 6.4.4. HICs shall be processed or handled as a liner if the package is not intended to provide stability as required in R313-15-1008.

NOTE: *Resin can only be used as fill material in HICs or liners.*

6.10.12 Chelating Agents

In accordance with Energy*Solutions*' Ground Water Quality Discharge Permit, waste containing chelating agents in excess 0.1% by weight are prohibited for disposal.

6.10.13 Lead

Lead used as shielding, an integral part of the waste component, or as waste itself is prohibited for disposal.

6.10.14 Mixed Waste

6.10.14.1 Hazardous waste as defined by RCRA, including characteristic or listed wastes, are prohibited from disposal at the CWF.

6.10.14.2 Characteristic hazardous waste, which has been treated for the characteristic hazard is prohibited from disposal at the CWF.

6.10.15 Polychlorinated Biphenyls (PCBs)

Waste containing PCBs, as outlined in 40 CFR 761, is prohibited from disposal at the CWF.

6.10.16 Asbestos

Containers which contain asbestos shall comply with 29 CFR 1910.1001 and 40 CFR 61.

6.10.17 Radium Wastes

6.10.17.1 Radium waste must be classified in accordance with Section 6.4.

6.10.17.2 Radium contained in self-luminous dials, hand dials, timepieces, compasses and electron tubes are not acceptable at this time.

6.10.17.3 Radium sources are not acceptable for disposal at this time.

6.10.18 Incinerator Ash

Incinerator ash waste shall be solidified or treated in such a manner as to be rendered non-dispersible in air, exclusive of packaging.

6.10.19 Gaseous Waste

Gaseous waste will be considered for disposal on a case-by-case basis. Contact the Director of Technical Services for information regarding compliance with the internal pressure and maximum permitted void requirements stated in Radioactive Materials License UT2300249, as amended.

6.11 Large Components

6.11.1 The following documents must be provided to the Director of Technical Services for review and approval:

6.11.1.1 The Transportation Plan including the transport method and conveyance, notifications to be made, the transportation routes and estimated schedules.

6.11.1.2 The authorization from US DOT and/or NRC for transportation of the component(s), if applicable.

6.11.1.3 The waste characterization/classification methods and documentation, regardless of waste class.

6.11.1.4 The dose assessment, which provides estimates of the personnel and fence line doses from the point of receipt through disposal.

6.11.1.5 Engineering drawings specifying dimension, weights, volume, voids, etc.

6.12 Nonconforming Shipments

6.12.1 The Customer shall be notified of any non-conformance.

6.12.2 The Utah DRC shall be notified of any nonconforming shipments that violate applicable regulations or license conditions.

6.12.3 Depending on the severity of the non-compliance, the generator's Notice to Transport may be rescinded and the Customer may be required to submit a Corrective Action Plan.

6.12.4 When deemed necessary, the shipment may be returned to the Customer.

6.12.5 The Customer shall be billed for any special services, detention, and additional handling charges on nonconforming shipments.

6.12.6 Energy*Solutions* shall follow Problem Report procedure ADMIN-1.0.

6.13 WAC Variance Request Form

6.13.1 The generator shall complete the WAC Variance Request Form (EC-98421) when a waste shipment or package does not comply with one or more conditions required by the WAC. This form shall be submitted to the Director of Technical Services or the CRSO.

6.13.2 The CRSO reviews and obtains signatures from the CWF Operations Manager and Director of Quality Assurance. The CRSO documents comments and approval/denial on the form and submits it back to the Director of Technical Services.

6.13.3 The Director of Technical Services submits the signed form to the generator and Document Control with the approval or denial information completed.

7.0 REFERENCES

7.1 Energy*Solutions*' ALARA Program, as amended

7.2 SHRC-4.4, Containerized Waste Facility Incoming Shipment Acceptance

7.3 UAC R313-15, Standards for Protection from Radiation

7.4 NRC Branch Technical Position on Waste Classification, May 1983

7.5 NRC Branch Technical Position on Concentration Averaging and Encapsulation, January 1995

7.6 49 CFR, Transportation

7.7 NRC Information Notice No. 83-10: Clarification of Several Aspects Relating to Use of NRC-Certified Transport Packages

7.8 Radioactive Material License UT 2300249

7.9 10 CFR 71, Packaging and Transportation of Radioactive Material

7.10 Ground Water Quality Discharge Permit UGW450005

7.11 29 CFR 1910, Occupational Safety and Health Standards

7.12 TSC- 1.0, Generator Certification

7.13 NUREG/BR- 0204, Instructions for Completing NRC's Low-Level Radioactive Waste Manifest

7.14 40 CFR 61, NESHAPs

7.15 40 CFR 261, Identification and Listing of Hazardous Waste

7.16 40 CFR 761, PCB Manufacturing, Processing, Distribution in Commerce and Use Prohibitions

7.17 NRC Regulatory Guide 1.86, Termination of Operating Licenses for Operating Reactors

7.18 10 CFR 61, Licensing Requirements for Land Disposal of Radioactive Waste

7.19 10 CFR 20, Standards for Protection Against Radiation

7.20 ADMIN-1.0, Problem Report Procedure

8.0 ATTACHMENTS

8.1 CWF Contact Information

8.2 WAC Variance Request Form (EC-98241, Revision 3)

8.3 Advanced Shipment Notification Form (EC-98242, Revision 4)

8.4 Instruction for Completing the Advanced Shipment Notification Form

8.5 CWF Approved Solidification Agent List

8.6 Classification Tables from UAC R313-15-1008

CWF Contact Information

Energy*Solutions* Site Phone	801-649-2010
CWF Operations Department	801-649-2186
CWF Health Physics Department	801-649-2130
CWF Site Fax	801-413-5652
Corporate Phone	801-649-2000
Corporate Fax	801-537-7345
Utah Division of Radiation Control–Site Access Permit	801-536-0077
Utah Division of Radiation Control Fax	801-533-4097
Utah Division of Radiation Control E-mail Address	drcadmin@utah.gov
CWF e-mail address	cwf@energysolutions.com
Cell Phones:	
Mark Ledoux, Corporate Radiation Safety Officer	801-201-6746
Bret Rogers, Director of Technical Services	801-550-9058

WAC Variance Request Form
EC-98241, Revision 3

1.0 Generator Information*

Generator Name _____

Generator No. _____

Utah DRC Site Access Permit No. _____

Contact Name/Email Address _____

Contact Phone/Fax Number _____

Submittal Date _____

2.0 Variance Information*

Section/Step of WAC _____

Description of Variance _____

Reason or Justification for Variance _____

Submit completed form to Director of Technical Services.

* Required information by generator.

3.0 Energy*Solutions* Review

License Amendment Required: Y ☐ N ☐ _____

Corporate Radiation Safety Officer

4.0 Energy*Solutions* Variance Response

Approved ☐ CWF Operations Manager _____ Date _____

Denied ☐ Comments _____

Approved ☐ Director of Quality Assurance _____ Date _____

Denied ☐ Comments _____

Approved ☐ Corporate RSO _____ Date _____

Denied ☐ Comments _____

Advanced Shipment Notification Form
EC-98242, Revision 4

1.0 Generator Information

Generator Name _____
Generator No. _____
*Utah DRC Site Access Permit # _____
Contact Name/Email Address _____
Contact Phone/Fax No. _____
Submittal Date _____

2.0 Shipment Information

Requested Delivery Date _____ ☐ Highway ☐ Rail
Total Activity (mCi or curies) _____
Maximum Contact Package Dose Rate (mR/hr or R/hr) (if more than one package, highest individual dose rate) _____
Percent of Each Waste Descriptor by Volume (Refer to CWF WAC Section 6.3.4.10) _____
Disposal Volume (ft^3) _____
Container Gross Weight (lbs) (if more than one pkg, list highest individual gross wt and total number of disposal packages) _____
Cask Model Number (if applicable) _____
HIC or Liner Model Number (if applicable) _____ ☐ Grapple ☐ Slings
Conveyance Type (e.g., van) _____
Void Remediation Required at CWF (See Section 6.4.4 of CWF WAC) No ☐ Yes ☐
Any Special Isotopes** (list) _____
SNM (grams) _____
Unusual Hazards*** _____
Special Requirements (Describe) _____
Cask or Conveyance Return Address (if applicable) - List company name, address,and phone number) _____

* As listed in Block 5 of Form 540.
** See Section 5.4.10 of the Waste Acceptance Criteria; in addition, list any activated metal isotopes (C-14, Ni-59, Nb-94, Ni-63)
*** See Section 6.10.10 of the Waste Acceptance Criteria.

3.0 For Energy*Solutions* Use Only

Shipment ID No. _____
Scheduled Delivery Date _____
CWF Operations Mgr. Approval _____ Date _____
Dir of Health Physics Approval _____ Date _____

Instruction for Completing the Advanced Shipment Notification Form

1.0 Generator Information

Generator Name	Provide the company name of the Certified Waste Generator
Generator No.	Provide the Certified Waste Generator Number (e.g. 1090-C)
*Utah DRC Site Access Permit #	Provide the Utah Generator Site Access Permit Number
Contact Name/Email Address	Provide the name and email address of an individual to be contacted for questions regarding this shipment.
Contact Phone/Fax No.	Provide the phone and fax number of the individual to be contacted
Submittal Date	Provide the date on which this form is submitted to Energy*Solutions*

2.0 Shipment Information

Requested Delivery Date	Indicate the date on which the shipment will arrive at Energy*Solutions* (The shipment must arrive prior to 09:00 AM). Also, indicate by checking the appropriate box the mode of transport. ☐ Highway ☐ Rail
Total Activity (mCi or curies)	Provide the total activity for the shipment and the appropriate units
Maximum Contact Package Dose Rate (mR/hr or R/hr) (if more than one package, highest individual dose rate)	Provide the Maximum contact dose rate for any package in the shipment
Percent of Each Waste Descriptor by Volume (Refer to CWF WAC Section 6.3.4.10)	Provide the percentage of each waste type
Disposal Volume (ft^3)	Provide the disposal volume of the waste/container
Container Gross Weight (lbs) (if more than one pkg, list highest individual gross wt and total number of disposal packages)	Provide the highest individual container gross weight. For multiple container shipments provide the number of containers.
Cask Model Number (if applicable)	Provide cask model number (e.g. 8-120B)
HIC or Liner Model Number (if applicable)	Provide the liner model number. ☐ Grapple ☐ Slings
Conveyance Type (e.g., van)	Provide the conveyance type (e.g. van, flatbed, etc)
Void Remediation Required at CWF (See Section 6.4.4 of CWF WAC)	With prior approval, EnergySolutions will remediate container void space for disposal containers not meeting the specified void criteria.
Any Special Isotopes** (list)	See Section 5.4.10 of the Waste Acceptance Criteria; in addition, list any activated metal isotopes (C-14, Ni-59, Nb-94, Ni-63)
SNM (grams)	List the total grams of U-235, U-233 and Pu
Unusual Hazards***	See Section 6.10.10 of the Waste Acceptance Criteria.
Special Requirements (Describe)	Describe any special requirements for the shipment.
Cask or Conveyance Return Address (if applicable) - List company name, address,and phone number)	List company name, address,and phone number) where cask is to be returned

* As listed in Block 5 of Form 540.
** See Section 5.4.10 of the Waste Acceptance Criteria; in addition, list any activated metal isotopes (C-14, Ni-59, Nb-94, Ni-63)
*** See Section 6.10.10 of the Waste Acceptance Criteria.

3.0 For EnergySolutions Use Only

Shipment ID No.			
Scheduled Delivery Date			
CWF Operations Mgr. Approval		Date	
Dir of Health Physics Approval		Date	

CWF APPROVED SOLIDIFICATION AGENT LIST

1. Atcor cement
2. Aquaset I and II
3. Aztech (General Electric)
4. Bitumen (Waste Chem and ATI)
5. Chem-Nuclear cement
6. Concrete (structural)
7. Delaware Custom Media
8. Dow Media
9. Envirostone
10. Pacific Nuclear Portland cement
11. Petroset I and II
12. Safe T Set
13. SEG (Westinghouse-Hittman cement)
14. Petroset- H
15. Aquaset- H
16. EMC cement
17. Dow Media (vinyl ester styrene)
18. Veri Solidification Process

Classification Tables from UAC R313-15-1008

Table I

Radionuclide	Ci/m^3	nCi/g
C-14	8	
C-14 in activated metal	80	
Ni-59 in activated metal	220	
Nb-94 in activated metal	0.2	
Tc-99	3	
I-129	0.08	
Alpha-emitting transuranics		
> 5 year T 1/2		100
Pu-241		3,500
Cm-242		20,000
Ra-226		100

Table II

Radionuclide	Column 1 Ci/m^3	Column 2 Ci/m^3	Column 3 Ci/m^3
Total of all radionuclides			
<5 year T 1/2	700		
H-3	40		
Co-60	700		
Ni-63	3.5	70	700
Ni-63 in activated metal	35	700	7,000
Sr-90	0.04	150	7,000
Cs-137	1	44	4,600